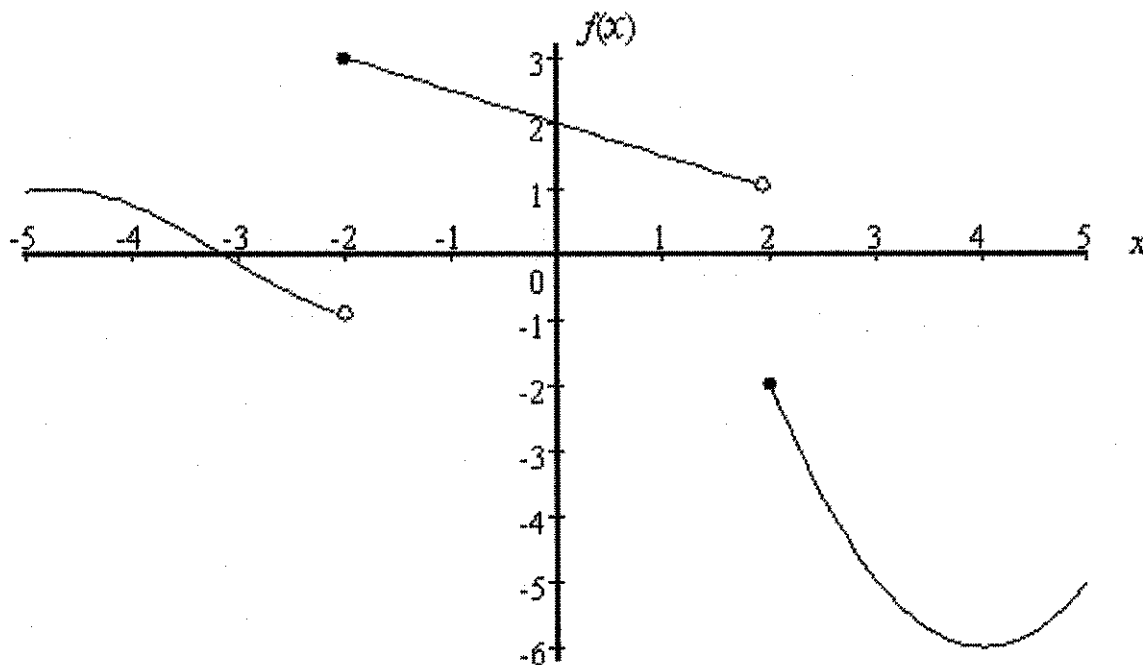


**Pre Cal Reg  
Final Exam Review #3**

**Name:**  
**Date:**

KEY



<p>1. What is the domain of the graph?</p> <p><math>(-\infty, +\infty)</math></p>	<p>2. What is the range of the graph?</p> <p><math>[-2, -6]</math></p>
<p>3. Identify the intervals on which the graph is decreasing <u>linearly</u>.</p> <p><math>[-2, 2)</math></p>	<p>4. What defines a function? How can you tell from the graph?</p>
<p>5. Find the value of:</p> <p><math>f(-2) = 3</math></p> <p><math>f(0) = 2</math></p> <p><math>f(2) = -2</math></p> <p><math>f(4) = -6</math></p>	<p>6. Find all values for x where:</p> <p><math>f(x) = 0 \quad x = -3.2</math></p> <p><math>f(x) = -1 \quad \text{DNE!}</math></p> <p><math>f(x) = -5 \quad x = 3 \quad \&amp; \quad x = 5</math></p>

7. Find the inverse of the following function:

$$f(x) = \frac{5}{x+7}$$

$$y = \frac{5}{x+7}$$

$$x = \frac{5}{y+7}$$

$$x(y+7) = 5$$

$$y+7 = \frac{5}{x}$$

$$y = \frac{5}{x} - 7$$

Find the x- intercepts by factoring

8.  $f(x) = x^2 - x - 56$

$$f(x) = (x-8)(x+7)$$

$$x=8 \quad x=-7$$

9.  $f(x) = 18x^2 + 9x + 1$

$$f(x) = (3x+1)(6x+1)$$

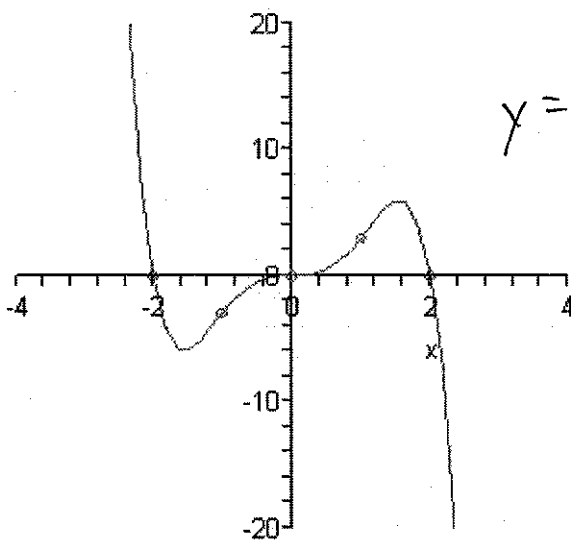
$$x = -\frac{1}{3} \quad x = -\frac{1}{6}$$

10.  $f(x) = 4900 - 36x^2$

$$f(x) = (70-6x)(70+6x)$$

$$x = \frac{70}{6} \quad x = -\frac{70}{6}$$

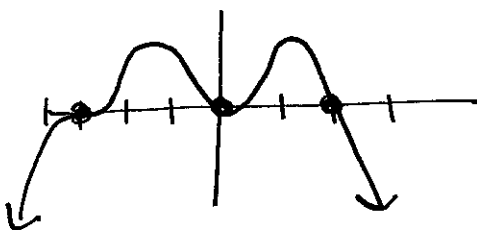
11. Write a factored form equation for the following function below.



$$y = -1(x+2)(x)^3(x-2)$$

↑  
end behavior

12. Sketch a graph of  $f(x) = -4(x+3)^3(x)^2(x-2)$



Solve the following rational equations.

13.

$$\frac{x}{15} + \frac{1}{3x} = \frac{2}{5}$$

$$x = 5$$

$$x = 1$$

14.

$$\frac{2}{x-2} + \frac{2}{5} = \frac{3x}{5x-10}$$

$$x = 6$$

15. Find the features of the following rational function.

$$f(x) = \frac{x^2 - 2x + 24}{x^2 + 15x + 44}$$

$$f(x) = \frac{(x-6)(x+4)}{(x+11)(x+4)}$$

y-intercepts  $y = \frac{-6}{11}$

x-intercepts  $x = 6$

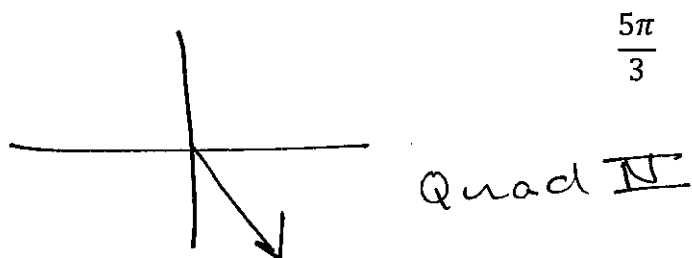
Holes:  $x = -4$

Vertical Asymptotes:  $x = -11$

**Rewrite each equation using logs or exponents.**

16. $4^3 = 48$	17. $\ln(148.413) = 5$
$\log_4(48) = 3$	$e^5 = 148.413$

**18. Sketch the following angle and identify the quadrant it lies in.**



**Convert degrees to radians and back**

19. $\frac{5\pi}{3} \cdot \frac{180^\circ}{\pi} = 300^\circ$	20. $130^\circ \cdot \frac{\pi}{180^\circ} = \frac{13\pi}{18}$
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**Find a coterminal angle between 0 and  $2\pi$  for each of the following.**

21. $\frac{17\pi}{3} - \frac{6\pi}{3} = \frac{11\pi}{3}$ $\uparrow$ $\frac{11\pi}{3} - \frac{6\pi}{3} = \frac{5\pi}{3}$ equivalent of $2\pi$ , or 1 full circle.	22. $\frac{-10\pi}{4} + \frac{8\pi}{4} = \frac{-2\pi}{4}$ $\frac{-2\pi}{4} + \frac{8\pi}{4} = \frac{6\pi}{4}$
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